Genetic variations of OprD porin protein in imipenem resistant clinical isolates of Pseudomonas aeruginosa in burn patients

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Abstract

Background: Drug resistance is one of the important threats in uncontrolled infections by Pseudomonas aeruginosa, an opportunistic nosocomial pathogen, in burn patients. The presence of OprD porin protein in the bacterial cell wall is one of the mechanisms for resistance against hydrophilic drugs in this bacterium.

Objective: The aim of this study was to evaluate genetic sequence rearrangements of OprD gene in imipenem resistant clinical isolates of pseudomonas aeruginosa in burn patients.

Methods: This cross sectional study was performed in Ghotbeddin Shirazi Hospital from October 2013 to February 2015. A total of 253 wound samples were evaluated for Pseudomonas aeruginosa. All isolates were evaluated using specific sequencing of the target region. Genetic sequence rearrangements were compared with the sensitivity pattern of the isolates to the imipenem.

Findings: Pseudomonas aeruginosa was found in 22% of the samples in Shiraz burn center. More than 90% of the isolates were multi drug resistant while only 25% were sensitive to imipenem. More than 80% of the imipenem resistant isolates had rearrangement in the gene associated with OprD protein.

Conclusion: With regards to the results, it seems that Pseudomonas aeruginosa, as a prevalent microorganism in burn wounds, has rearrangement in the gene associated with OprD porin protein. This rearrangement may play a role in drug resistance of the Pseudomonas aeruginosa isolates in hospitalized patients.

Keywords: Burns, Pseudomonas Aeruginosa, Imipenem, OprD Protein

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